Purpose:
We have evaluated the feasibility of using a software package to monitor the results of quality control (QC) testing on digital mammography units in the Ontario Breast Screening Program. The intent is to make the quality control process more efficient for the technologist and physicist, and improve the consistency of test performance and results interpretation.

Methods:
A DICOM service class provider, "GLADYS" (originally developed at University Hospitals Leuven) was installed at pilot screening sites. All images acquired on the sites' mammography systems are automatically sent to GLADYS over the PACS networks.   GLADYS recognizes QC images by predetermined patient names and performs an automated analysis, measuring various parameters and generating summary thumbnail images. Clinical images are de-identified and the technique factors and dose are extracted for tracking. The QC and dose reports are sent by email to the central monitoring site.

At the central site QC image measures are plotted and thumbnail images displayed for artefact evaluation. The patient header information is stored such that dose reports can be generated.

Results:
GLADYS has been installed at two remote screening sites, and locally for a total of six machines.   QC and dose data have been collected for the past 5.5 months. 285 QC images have been analyzed. Artefacts and changes in automatic exposure control or detector behaviour are easily perceived. Dosimetry information from 18282 patient images has been collected, with an average mean glandular dose of 1.3 mGy.

Conclusions:
The automated analysis works well, and reduces the technologist's QC workload. The addition of features to allow for automated immediate feedback to the remote sites of test results to ensure rapid response to detected problems is under development. Incorporation of centralized automatic quality control has the potential to improve the consistency and reliability of the tests and results, while streamlining QC procedures.